

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

Health Discovery Corporation

Plaintiff,

v.

Intel Corporation

Defendant.

Civil Action No. 6:20-cv-666-ADA

**JURY TRIAL DEMANDED**

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**PLAINTIFF'S OPPOSITION TO DEFENDANT'S MOTION TO DISMISS**

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## **INTRODUCTION**

Health Discovery Corporation (“HDC”) filed this lawsuit on July 23, 2020, accusing Intel Corporation (“Intel”) of direct and indirect infringement of the independent and dependent claims of four HDC patents.<sup>1</sup> HDC and Intel’s dispute over the technology at issue has been ongoing for nearly a decade, beginning in November 2010 and culminating in an Interference proceeding between the parties. (Dkt. 1, Compl. ¶ 4.) Intel had obtained a patent on the technology, but after fighting for years to keep it for itself, eventually conceded priority to HDC on January 23, 2017, and on the same day, implemented a scorched-earth strategy to invalidate HDC’s patents under 35 U.S.C. § 101, thereby sacrificing its own patent. (*Id.*) HDC won the Interference. (*Id.*)

The asserted claims are directed to improving computer-implemented processes for identifying patterns in large datasets. This technology, known as “SVM-RFE”, was first invented and disclosed approximately twenty years ago by top Ph.D. leaders in the field. It was widely recognized as a groundbreaking technological advancement and has since been cited more than 8,000 times by leaders in the field. (*See id.* ¶¶ 5, 22, 27, 29.) HDC’s Complaint explains the importance of the claimed invention in numerous fields that rely upon the recognition of patterns in vast datasets. Moreover, the specifications for the asserted patents detail the specific way SVM-RFE improves upon the speed and accuracy of various methods for identifying patterns in extremely large datasets, such as those studying the human genome and the human proteome.

On October 19, 2020, Intel filed a Motion to Dismiss (“Motion”) pursuant to Rule 12(b)(6) of the Federal Rules of Civil Procedure (“Rule 12(b)(6)”), asking the Court to find the asserted patents subject-matter ineligible under 35 U.S.C. § 101 (“Section 101”) as a matter of law and

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<sup>1</sup> U.S. Patent No. 7,117,188 (the “188 patent”); U.S. Patent No. 7,542,959 (the “959 patent”); U.S. Patent No. 8,095,483 (the “483 patent”); and U.S. Patent No. 10,402,685 (the “685 patent”). (Dkt. 1, Compl. ¶¶ 15-18; *see also* Dkt. 1-1 through Dkt. 1-4.) All the asserted patents share a substantially common specification.

challenging the sufficiency of HDC's direct and indirect infringement claims. (Dkt. 12.) Intel's Motion ignores controlling Federal Circuit precedent regarding the resolution of Section 101 issues on a Rule 12(b)(6) motion. Moreover, Intel's Motion ignores the widespread peer-reviewed recognition of the inventive value of the patented technology over the prior art, as described in detail in HDC's Complaint and discussed in the specifications of the asserted patents, which demonstrate that the claimed invention is directed to improving existing computer functionality, and contains an inventive concept, under the Supreme Court's two-step analysis in *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014) ("*Alice*"). At a minimum, there are disputed issues of material fact on these points. Accordingly, the Court should deny Intel's improper 101 arguments at the pleading stage.

The Court should also deny Intel's challenge to the sufficiency of HDC's infringement allegations. The detailed allegations in HDC's 144-page Complaint identifies the accused Intel products, claims, and infringement theories with specificity, including plausible allegations establishing how the accused products (whether hardware or software) infringe (whether individually, jointly, or indirectly) each element of the asserted claims (both for the independent and dependent claims, whether method, computer program product, medium, or apparatus). Therefore, HDC has met the notice pleading standards that this Court routinely applies in denying formalistic motions like that brought by Intel.

## **RELEVANT LAW**

### **I. Notice Pleading under Rule 8(a) and Rule 12(b)(6)**

Fed. R. Civ. P. 8(a)(2) requires only "'a short and plain statement of the claim showing that the pleader is entitled to relief,' in order to 'give the defendant fair notice of what the . . . claim is and the grounds upon which it rests.'" *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 545 (2007)

(quoting *Conley v. Gibson*, 355 U.S. 41, 47 (1957)). Motions to dismiss are procedural questions to which the Federal Circuit applies the law of the regional circuit. *CoreBrace LLC v. Star Seismic LLC*, 566 F.3d 1069, 1072 (Fed. Cir. 2009). In the Fifth Circuit, motions to dismiss under Rule 12(b)(6) are viewed with disfavor and rarely granted. *Lormand v. US Unwired, Inc.*, 565 F.3d 228, 232 (5th Cir. 2009); *Lowrey v. Texas A&M Univ. Sys.*, 117 F.3d 242, 247 (5th Cir. 1997). In considering a Rule 12(b)(6) motion, the Court “accept[s] all well-pleaded facts as true and view[s] all facts in the light most favorable to the plaintiff.” See *Thompson v. City of Waco, Texas*, 764 F.3d 500, 502 (5th Cir. 2014) (citing *Doe ex rel. Magee v. Covington Cnty. Sch. Dist. ex rel. Keys*, 675 F.3d 849, 854 (5th Cir. 2012) (en banc)). A plaintiff need provide “only enough facts to state a claim for relief that is plausible on its face.” *Twombly*, 550 U.S. at 570.

## II. Section 101 Analysis

HDC’s asserted claims are patent eligible under Section 101. Patent-eligible subject matter includes “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” 35 U.S.C. § 101 (1952). The exceptions are for “[l]aws of nature, natural phenomena, and abstract ideas.” *Alice*, 134 S. Ct. at 2354. The Supreme Court’s two-step analysis in *Alice* distinguishes “patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.”

Under the first *Alice* step, the Court must “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” If not, “the claims pass muster under [Section] 101.” *Ultramercial Inc. v. Hulu*, 772 F.3d 709, 714 (Fed. Cir. 2014). A claim is eligible under Section 101 when the claim, as a whole, is directed to a non-abstract improvement of an existing technological process. *Koninklijke KPN N.V. v. Gemalto M2M GmbH*, 942 F.3d 1143, 1150 (Fed. Cir. 2019); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335-36 (Fed. Cir. 2016). In this



regard, the Court must first “articulate with specificity what the claims are directed to” and determine “whether the claims are directed to an improvement of computer functionality versus being directed to an abstract idea.” *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1258 (Fed. Cir. 2017) (citing *Thales Visionix Inc. v. United States*, 850 F.3d 1343m 1347 (Fed. Cir. 2017) and quoting *Enfish*, 822 F.3d at 1355).

In *Enfish*, the Federal Circuit held the claims patent eligible where “the plain focus of the claims is on an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity.” 822 F.3d at 1336; accord *SRI Int’l v. Cisco Systems, Inc.*, 930 F.3d 1295, 1304 (Fed. Cir. 2019) (finding patent eligible claims improved the “technical functioning of a computer” and did more than just “automating a conventional idea on a computer.”). In other words, the key question is “whether the focus of the claims is on the specific asserted improvement in computer capabilities (*i.e.*, the self-referential table for a computer database) or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are involved merely as a tool.” *Enfish*, 822 F.3d at 1335-36 (finding that the disclosed technique enabled faster searching than the prior art methods).

Under the second step of *Alice*, which is only reached if under step one the claims are determined to be directed to patent-ineligible subject matter, the Court must consider the elements of each claim both individually and ‘**as an ordered combination**’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (emphasis added) (quoting *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1297 (2012)). Even if the claims are directed to an abstract concept, this second step asks whether the claims add an “inventive concept” that is “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible

concept itself.” *Id.* (internal citations omitted). In determining whether there is an “inventive concept,” courts determine whether there are “additional features” that are more than “well-understood, routine, conventional activities previously known to the industry.” *Mayo*, 132 S. Ct. at 1298. Additionally, the “inventive concept” can also be found when the claim involves an unconventional technological solution which necessarily requires the elements to work together in an unconventional manner to achieve an improvement in computer functionality. *See Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1301 (Fed. Cir. 2016).

The Federal Circuit has repeatedly held that “deciding whether claims recite an ‘inventive concept, or something more than ‘well-understood, routine, conventional activities previously known to the industry,’ may turn on ‘**underlying questions of fact.**’” *Cellspin Soft. Inc. v. Fitbit, Inc.*, 927 F.3d 1308, 1315 (Fed. Cir. 2019) (quoting *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1128 (Fed. Cir. 2018) (“*Aatrix I*”); accord *Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018) (“The patent eligibility inquiry may contain underlying issues of fact.”) (citation omitted). Intel’s Motion fails to cite these controlling principles of law.

When patent eligibility is challenged on a Rule 12(b)(6) motion, the Court must deny the motion if “in the light most favorable to the plaintiff and with every doubt resolved in the pleader’s favor . . . the complaint states any legally cognizable claim for relief.” *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 890 F.3d 1354, 1357 (Fed. Cir. 2018) (“*Aatrix II*”). The Federal Circuit has held that “patentees who adequately allege their claims contain inventive concepts survive a § 101 eligibility analysis under Rule 12(b)(6).” *Aatrix I*, 882 F.3d at 1126-27 (citation omitted). Thus, when, like here, the patentee’s allegations “at a minimum raise factual disputes underlying the § 101 analysis,” the motion to dismiss under Rule 12(b)(6) should be denied. *Aatrix II*, 890 F.3d at 1357.

In *Cellspin*, the Federal Circuit vacated and remanded a district court decision that did not follow the express holdings of *Aatrix* and *Berkheimer*. See *Cellspin*, 927 F.3d at 1318-19. Specifically, the Federal Circuit held that the district court “erred by ignoring the principle, implicit in *Berkheimer* and explicit in *Aatrix*, that factual disputes about whether an aspect of the claims is inventive may preclude dismissal at the pleadings stage under §101.” *Cellspin*, at 1318 (citing *Aatrix I*, 882 F.3d at 1126-27) (“[P]atentees who adequately allege their claims contain inventive concepts survive a [Section] 101 eligibility analysis under Rule 12(b)(6).”). In its holding, the Federal Circuit found that the district court erred by not accepting plaintiff’s well-pleaded allegations, as alleged in the complaint and supported by the patent specification, as true, where the plaintiff presented the asserted claims as “plausibly inventive.” *Id.* at 1319-20 (the court stated that, with a “limited record . . . at this stage in the case,” and with the plaintiff specifically alleging that at least two claimed concepts were inventive, there was no basis to find that the claimed techniques “were well-known or conventional as a matter of law.”).

This Court recently denied a motion to dismiss brought on grounds similar to those raised by Intel. See *Encoditech, LLC v. Citizen Watch Co. of Am., Inc.*, No. SA-18-CV-1335-XR, 2019 WL 2601347, \*1-4 (W.D. Tex. June 25, 2019). There, as here, the defendant argued that: (1) the asserted patent was unpatentable under Section 101 as it covered an abstract idea; and (2) plaintiff failed to allege that the accused product possessed every limitation stated in the patented claim, and thereby failed to sufficiently state a direct infringement claim. See *id.*

In addressing the 101 issue, this Court applied *Alice*’s two pronged test: (1) whether the claims at issue are directed to “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof,” and, if not, (2) whether there is “an ‘inventive concept’ – *i.e.*, an element or combination of elements that is sufficient to ensure that

the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.” *Id.* at \*1-2 (citing *Alice*, 134 S. Ct. at 2355). The court determined that the claims were “directed to the abstract idea of establishing a secure wireless communication link and sending and receiving encrypted messages.” *Id.* at \*3. But, the court denied the motion to dismiss at step two of *Alice*, holding that, “taking [plaintiff’s] allegations as true,” the plaintiff raised sufficient questions of fact, as it alleged that the use of common key encryption was an inventive concept. *Id.* (citing *Berkheimer*, 881 F.3d at 1369 (“[Inventive features] create a factual dispute regarding whether the invention describes well-understood, routine, and conventional activities.”)).

Second, in addressing defendant’s failure to state a claim assertion, this Court applied recent Federal Circuit precedent, and held that plaintiff’s allegations were sufficient “because the complaint specifically identified [the accused product] and alleged that the accused product[] met ‘each and every element of at least one claim’ of the asserted patent[], either literally or equivalently.” *See id.* at \*4 (quoting *Disc Disease Sols. Inc. v. VGH Sols., Inc.*, 888 F.3d 1256, 1260 (Fed. Cir. 2018)). For those reasons, the court denied the defendant’s motion to dismiss. Intel’s Motion should similarly be denied.

## **ARGUMENT**

### **I. The Complaint, Claims, and Specification Demonstrate that the Claims Are Directed to a Technological Improvement and Contain Inventive Concepts.**

The Complaint contains clear allegations demonstrating that the claimed invention is both directed to improving an existing technological or computer functionality (*Alice* step one), *and* contains an inventive concept (*Alice* step two). Specifically, the asserted claims are **directed to improving computer-implemented processes for identifying patterns in large datasets**.

As alleged in the Complaint, each of HDC’s asserted patents “relate to **innovative technology** for using learning machines (*e.g.*, Support Vector Machines) to identify relevant

patterns in datasets, and more specifically, to a selection of features within the datasets that best enable classification of the data (*e.g.*, Recursive Feature Elimination).” (Compl. ¶ 27 (emphasis added); *see also id.* ¶ 5 (same).) The Complaint further alleges that **“SVM-RFE utilizes this pattern recognition capability to identify, rank and order the features that contribute most to the desired results, and successively eliminate the features with the lowest rank order, until the optimal feature set is obtained to define the model.”** (*Id.* ¶ 29 (emphasis added).)

The Complaint also identifies the importance of the claimed invention to several fields that rely upon the recognition of patterns in vast datasets. Specifically, the Complaint alleges that **“[SVM-RFE] is an important technology that is utilized across a broad spectrum of applications (*e.g.*, artificial intelligence, drug discovery, healthcare, economics, coding, data collection and data mining, etc.) and is widely used today.”** (*Id.* ¶ 5 (emphasis added).) Moreover, the Complaint explains that the “inventors of HDC’s SVM-RFE patents, Dr. [Jason] Weston and Dr. [Isabelle] Guyon, are world leaders in the field of machine learning.” (*Id.* ¶ 22.)<sup>2</sup>

As further noted in the Complaint, as of the date its filing, the academic paper that first described SVM-RFE, authored by Drs. Weston and Guyon, “has been cited at least **8,098 times** across numerous academic and industry mediums (books, journals, reports, patents, etc.), including at least **378 times** in 2020 alone (and counting).” (Compl. ¶ 5 (emphasis added).) In fact, the Complaint cites (and attaches as exhibits) numerous publications and presentations authored by Intel researchers, dating back as far as 2005, describing Intel’s use of SVM-RFE; and, several of these articles tout its inventive value. (*Id.* ¶ 35.) For example, one leading Intel researcher notes

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<sup>2</sup> Dr. Weston earned a Ph.D. in machine learning at Royal Holloway, University of London, and is currently employed as a research scientist at Facebook AI Research. (Dkt. No. 1-5, Zhang Decl. ¶ 22.) Dr. Guyon earned a Ph.D. in electrical engineering from the Université Pierre et Maria Curie in Paris and operates an independent consulting company specializing in statistical data analysis, pattern recognition, and machine learning techniques. (*Id.* ¶ 23.)

that “SVM-RFE has been used for the task of microarray data analysis, particularly in **disease gene finding**,” and emphasizes that SVM-RFE “**eliminates gene redundancy automatically and yields better and more compact gene subsets**.” (Dkt. 1-9, Yurong Chen, et al., “Performance Scalability of Data-Mining Workloads in Bioinformatics,” *Intel Technology Journal*, Vol. 9, Issue 2, May 19, 2005, at 133 (emphasis added).)

Significantly, Intel’s Motion simply ignores the pertinent allegations in the Complaint, failing to cite or acknowledge the allegations discussed above. Nonetheless, the well-pleaded allegations in HDC’s Complaint, which the Court is required to accept as true at this stage, plausibly allege that the claimed SVM-RFE invention is both directed to improving an existing technological or computer functionality and contains an inventive concept.

Supporting the inventive features of SVM-RFE, the specification identifies numerous deficiencies in the prior art. For example, the specification discusses the “huge amount of data” generated in the study of the human genome and proteome and the inadequacy of existing technologies to identify patterns of useful knowledge within those “vast amounts of data.”

Problems with identifying patterns in large datasets
<p>“Enormous amounts of data about organisms are being generated in the sequencing of genomes.” (’188 pat. at 1:46-47.) “Another area of biological investigation that can generate a <b>huge amount of data</b> is the emerging field of proteomics.” (<i>Id.</i> at 2:22-23 (emphasis added).) “The <b>human genome</b> potentially contains 30,000 genes but the <b>human proteome</b> is believed to be 50 to 100 times larger. Currently, there are no method, systems, or devices adequately analyzing the data generated by such biological investigations into the genome and proteome.” (<i>Id.</i> at 2:65-3:3 (emphasis added).) “With many existing techniques the problem has become <b>unapproachable</b>.” (<i>Id.</i> at 3:11-12 (emphasis added).) “<b>Traditional methods of data analysis may be used to create informative reports from data, but do not have the ability to intelligently and automatically assist humans in analyzing and finding patterns of useful knowledge in vast amounts of data</b>.” (<i>Id.</i> at 3:21-25 (emphasis added).)</p>

The specification further discusses problems with “neural network” advanced learning technologies described in the prior art, which the specification notes are only capable of generating “crude models,” can “obscure the optimal solution from discovery,” and are “inherently slow.”

Problems with neural network technology
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<p>“Human researchers, when aided by advanced learning tools such as <b>neural networks</b> can only derive <b>crude models</b> of the underlying processes represented in the large, feature-rich datasets.” (’188 pat. at 2:18-21 (emphasis added).) “A significant drawback of back-propagation neural networks is that the empirical risk function may have many local minimums, a case that can easily <b>obscure the optimal solution from discovery.</b>” (<i>Id.</i> at 3:49-52 (emphasis added).) “Furthermore, the convergence of the gradient-based method used in neural network learning is <b>inherently slow.</b>” (<i>Id.</i> 3:62-63 (emphasis added).)</p>
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The specification goes on to explain that SVM technology, which was a precursor to the claimed SVM-RFE technology, solved some of the problems with neural networks, but had limitations of its own, demonstrating the need for the claimed SVM-RFE technology.

Problems with SVM technology
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<p>“The shortcomings of neural networks are overcome using Support vector machines. (’188 pat. at 4:4-5.) “Support vector machines provide a desirable solution for the problem of discovering knowledge from vast amounts of input data. <b>However, the ability of a support vector machine to discover knowledge from a data set is limited in proportion to the information included within the training data set.</b> Accordingly, there exists a need for a system and method for pre-processing data so as to augment the training data to maximize the knowledge discovery by the Support vector machine. <b>Furthermore, the raw output from a support vector machine may not fully disclose the knowledge in the most readily interpretable form.</b> Thus, there further remains a need for a system and method for post-processing data output from a Support vector machine in order to maximize the value of the information delivered for human or further automated processing.” (<i>Id.</i> at 4:45-60 (emphasis added).)</p>
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<p>“A common problem in classification, and machine learning in general, is the reduction of dimensionality of feature space to overcome the risk of “overfitting.” (<i>Id.</i> at 25:29-31.) “Training techniques that use regularization, i.e., restricting the class of admissible solutions, can avoid overfitting the data without requiring space dimensionality reduction. Support Vector Machines (SVMs) use regularization, however <b>even SVMs can benefit from space dimensionality reduction.</b>” (<i>Id.</i> at 25:38-43 (emphasis added).)</p>
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Claim 1 of the ’188 patent (75:34-55), which is representative, sets forth clear limitations, which when taken both individually and as an ordered combination, demonstrate that the claimed SVM-RFE invention is both directed to improving an existing technological or computer functionality (*Alice* step one) and contain an inventive concept (*Alice* step two). As an initial matter, the preamble to Claim 1 identifies the subject matter to which the claimed method is directed: “A **computer-implemented** method for **identifying patterns in data . . .**” (’188 pat.

at 75:34-35 (emphasis added).) This express language, in and of itself, read in the context of the specification’s discussion of the problems associated with prior art methods, systems, and devices, such as neural networks and SVMs, demonstrates that claim 1 is directed to an improvement in the computer-implemented process for identifying patterns in large datasets.

In addition, each method step thereafter tracks directly to the inventive aspects of SVM-RFE, set forth in the ’188 patent’s specification (as discussed below), which are directed to improving the computer-implemented process for identifying patterns in large datasets. Specifically, limitation (a) claims “inputting into at least one support vector machine of a plurality of support vector machines a **training set** having known outcomes, the at least one support vector machine comprising a decision function having a plurality of weights, each having a weight value, wherein the training set **comprises features corresponding to the data and wherein each feature has a corresponding weight.**” (’188 pat. at 75:36-43 (emphasis added).)

Limitation (b) claims “**optimizing** the plurality of **weights** so that **classifier error is minimized.**” (*Id.* at 75:44-45 (emphasis added).) This limitation thus specifically claims an improvement – the reduction of classifier error – in the computer-implemented process for identifying patterns in large datasets. In *Thales*, the Federal Circuit found the patent claims at issue eligible, under *Alice* step 2, where the patented system achieved greater *accuracy* than the prior art system. *Thales*, 850 F.3d at 1345. The court concluded that the claims were not directed to the abstract idea of using mathematical equations to determine the position of a moving object relative to a moving reference frame, and were instead directed to “systems and methods that use internal sensors in a non-conventional manner **to reduce errors** in measuring the relevant position and orientation of a moving object on a moving reference frame.” *Id.*, 850 F.3d at 1348-49.



The remaining limitations in claim 1 set forth further inventive features of the claimed SVM-RFE technology. Limitation (c) claims “computing **ranking criteria** using the optimized plurality of weights.” (*Id.* at 75:46-47 (emphasis added)). Limitation (d) claims “**eliminating at least one feature** corresponding to the **smallest ranking criterion**.” (*Id.* at 75:48-49 (emphasis added)). Limitation (e) claims “repeating steps (a) through (d) for a plurality of **iterations** until a **subset of features** of predetermined size remains.” (*Id.* at 75:50-52 (emphasis added).) Finally, limitation (f) claims “inputting into the at least one support vector machine a **live set of data** wherein the features within the live set are selected according to the **subset of features**.” (*Id.* at 75:53-55 (emphasis added).)

The specification clearly discusses how these claim limitations improve the computer-implemented process for identifying patterns in large datasets, including by **increasing processing speed without sacrificing accuracy**. For example:

SVM-RFE improves upon the prior art computer-implemented processes
“Given the foregoing difficulties, <b>feature selection</b> in large dimensional input spaces is performed using greedy algorithms. Among various possible methods, <b>feature ranking</b> techniques are particularly preferred.” (’188 pat. at 25:64-66 (emphasis added).) “One aspect of the present invention comprises using the feature ranking coefficients as <b>classifier weights</b> .” ( <i>Id.</i> at 27:25-26 (emphasis added).)
“A good <b>feature ranking criterion</b> is not necessarily a good criterion for <b>ranking feature Subsets</b> . Some criteria estimate the effect on the objective function of <b>removing one feature at a time</b> . These criteria become suboptimal when <b>several features are removed at one time</b> , which is necessary to obtain a small feature subset. <b>Recursive Feature Elimination (RFE) methods can be used to overcome this problem</b> . RFE methods comprise iteratively 1) <b>training the classifier</b> , 2) <b>computing the ranking criterion for all features</b> , and 3) <b>removing the feature having the smallest ranking criterion</b> . This <b>iterative procedure</b> is an example of backward feature elimination.” ( <i>Id.</i> at 27:56-67 (emphasis added).)
“To <b>increase computational speed</b> , RFE is preferably [sic] implemented by training multiple classifiers on Subsets of features of decreasing size.” ( <i>Id.</i> at 30:3-6 (emphasis added).) “ <b>Without trading accuracy for speed</b> , RFE can be used by removing <b>chunks of features</b> in the first few iterations and then, in <b>later iterations</b> , removing <b>one feature at a time once the feature set reaches a few hundreds</b> . RFE can be used when the number of features, e.g., genes, is increased to millions. Furthermore, <b>RFE consistently outperforms the naive ranking</b> , particularly for small feature subsets.” ( <i>Id.</i> at 30:14-20 (emphasis added).)

“When it is determined that the **optimal solution** has been identified, **a live data set** may be collected and pre-processed in the same manner as was the **training data set**. The pre-processed live data set is input into the learning machine for processing.” (*Id.* at 6:27-31 (emphasis added).)

“A trained learning machine may optionally be tested using test data to ensure that its output is validated within an acceptable margin of error. Once a learning machine is trained and tested, live data may be input therein. **The live output of a learning machine comprises knowledge discovered from all of the training data as applied to the live data.**” (*Id.* at 9:48-54 (emphasis added).)

“Rather than ranking the genes once with the weights of an SVM classifier according to the naive ranking discussed above, instead, the Recursive Feature Elimination (RFE) method was used. **At each iteration, a new classifier is trained with the remaining features. The feature corresponding to the smallest weight in the new classifier is eliminated.**” (*Id.* at 53:48-53 (emphasis added).)

Indeed, the specification discusses statistically significant, objective evidence showing that the claimed SVM-RFE technology is superior to prior art technology, including technologies that use “a linear classifier.” For example, the specification compares the results of SVM-RFE to the results found in a study, authored by Golub et al, which used a “linear classifier.” (*See* ’188 pat. at 38:29-39:29.) After using a “statistical test” to determine what level of confidence “one classifier is better than the other,” the specification notes that the methods of SVM-RFE “**were better than Golub with 95.8% confidence.**” (*See id.* (emphasis added).) These results are reflected in Table 6 of the specification, which shows that SVM-RFE demonstrated a lower “optimum error rate” and “error rate at the optimum number of genes” when compared to the method used by Golub. (*See id.* at 39:16-21.)

Once again, Intel’s Motion simply ignores the inventive aspects of the claims and the detailed discussion of SVM-RFE’s inventive value in the specification. Indeed, Intel’s Motion does not cite to the specification at all. Moreover, nothing in the specification describes SVM-RFE as conventional. *See Aatrix*, 882 F.3d at 1129 (denying the defendant’s Section 101 challenge

and noting that the defendant had conceded at oral argument that nothing in the specification describes the inventive aspect of the asserted claim as conventional).

Instead, Intel repeatedly invokes its summary incantation that the asserted claims merely collect information, analyze it, and display the results, citing a series of Federal Circuit decisions in support. (Dkt. 12, Def.'s Mot. 8-9.) These cases are inapposite and easily distinguishable, as a group and individually. As a group, all four cases are directed to automating general business or financial processes. *See SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1164 (Fed. Cir. 2018) (utilizing resampled statistical methods for the analysis of financial and investment data); *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) (managing XML data in routine business transactions); *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1093 (Fed. Cir. 2016) (detecting fraud in patient health records by analyzing audit data logs); *Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1054 (Fed. Cir. 2017) (analyzing financial information and processing an application for auto financing).

Individually, the cases fair even worse. *SAP* merely used mathematical techniques on an existing set of financial or investment data to provide information beyond a normal or Gaussian distribution in the prior art. *SAP*, 898 F.3d at 1163. *Intellectual Ventures I* was directed to a system and method for editing XML documents, where the so-called innovative “management record types” (“MRTs”) and “primary record types” (“PRTs”), were found by the court to be just broadly defined labels for generic data types that transfer data from one type of electronic document to another. *Intellectual Ventures I*, 850 F.3d at 1341. In *FairWarning*, the court held that the method of detecting fraud in patient health records using audit logs “merely implement an old practice in a new environment,” and that such a process has been performed by humans in analogous situations “for decades, if not centuries.” *FairWarning*, 839 F.3d at 1094-1095. Finally,

*Credit Acceptance* involved an appeal of a PTAB rejection under Section 101, in a Covered Business Method (CBM) proceeding. *Credit Acceptance*, 859 F.3d at 1054. The claims were directed to processing an application for financing the purchase of a car at an auto dealership, and simply automated the prior manual steps of processing loan applications using generic computers. *Id.* at 1055. These cases are simply inapposite. Unlike the cases Intel relies on, HDC's asserted claims are not directed at the simple manipulation of business or financial data, but rather are directed towards a previously unattained technological enhancement for identifying patterns in large datasets.

In sum, the well-pleaded allegations in HDC's Complaint and the detailed descriptions in the specification adequately demonstrate that the claimed SVM-RFE invention is both directed to improving an existing technological or computer functionality and contains an inventive concept, thus satisfying *Alice* steps one and two. At a minimum, the Complaint and specification demonstrate that the patent eligibility of the asserted claims is a disputed issue of fact. Accordingly, under the explicit holdings of the Federal Circuit in *Aatrix* and *Cellpsin*, the Court cannot resolve Intel's Section 101 challenge at this stage of the pleadings.

**II. HDC Has Properly and Sufficiently Pled Direct Infringement as the Complaint Exceeds the Minimum Pleading Standard and Provides a Plausible Inference of Intel's Infringement.**

Notice pleading does not require "detailed factual allegations," as long as the plaintiff provides "more than labels and conclusions." *Twombly*, 550 U.S. at 545. In the patent context, there is ample guidance on pleading infringement under *Twombly* — a plaintiff need only provide plausible allegations and fair notice of infringement by identifying the accused products and alleging that the accused products meet "each and every element of at least one claim" of the asserted patents. *See Encoditech*, 2019 WL 2601347, at \*4 (quoting *Disc Disease*, 888 F.3d at

1258-60). To this end, a plaintiff need provide “only enough facts to state a claim for relief that is plausible on its face.” *Twombly*, 550 U.S. at 570.

HDC’s complaint more than meets this standard – the accused products are identified (*see* Compl. ¶¶ 51-54), the products are alleged to infringe each element of the asserted claims (both for the independent and dependent claims) (*see id.* ¶¶ 55-69, 101-117, 150-169, 202-219), and HDC has provided plausible allegations establishing how each accused product (whether hardware or software) infringe (whether individually or jointly) the claims (whether method, computer program product, medium, or apparatus) of the asserted patents (*see id.* ¶¶ 55-73, 101-122, 150-176, 202-226). As this Court recently held in *Encoditech*, nothing more is needed at this stage. 2019 WL 2601347, at \*4 (holding that the plaintiff “only needed to identify and include product by name, allege that defendants make, sell, offer to sell, [] import, or use in the United States that accused product, and to allege that the accused product satisfies each and every limitation of at least one claim.”). Therefore, Intel’s assertions that more is needed are incorrect.

Intel prematurely (and incorrectly) construes the computer program product and machine-readable medium claims as software, and in doing so relies on two older cases which are distinguishable from the present action. (Dkt. 12, Def.’s Mot. 15-16 (citing *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1330 (Fed. Cir. 2001) (appealing a summary judgment holding, not a motion to dismiss, that was made after Markman briefs and significant discovery); *Nazomi Comm., Inc. v. Nokia Corp.*, 739 F.3d 1339, 1346 (Fed. Cir. 2014) (same)). This is not appropriate at the pleadings stage. Intel also wrongly asserts that HDC’s alternative joint infringement allegations are deficient. While Intel points to a correct precedent, that is *Lyda v.*

*CBS Corp.*, 838 F.3d 1331, 1338-39 (Fed. Cir. 2016),<sup>3</sup> its motion stops there and fails to show how HDC’s complaint is deficient. (Def.’s Mot. at 16-17.) Intel’s argument, at best, is inadequate, as it misapplies *Lyda* and fails to account for any of the many cases that have come since. (*See id.*)

To state a claim for joint infringement, a plaintiff must allege “facts sufficient to allow a reasonable inference that all steps of the claimed method are performed and either (1) one party exercises the requisite ‘*direction or control*’ over the others’ performance or (2) the actors form a joint enterprise such that performance of every step is attributable to the controlling party.” *Lyda*, 838 F.3d at 1338-39 (emphasis added). To establish the “direction and control” form of joint infringement, a plaintiff can show that a defendant has an agent, has a contract with another, or “conditions participation in an activity on receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.” *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 797 F.3d 1020, 1023 (Fed. Cir. 2015) (en banc); *see also Travel Sentry, Inc. v. Tropp*, 877 F.3d 1370, 1382 (Fed. Cir. 2017). In *Travel Sentry*, the Federal Circuit expanded the types of “control” and “benefit” based relationships discussed in *Akamai*. *See* 877 F.3d 1370, at 1380 (a benefit may be intangible and the terms of control need not be binding).

Oddly, Intel agrees that HDC’s Complaint, *inter alia*, “asserts that Intel directs or controls the other actor(s) by condition[ing] participation in activities, as well as the receipt of benefits upon performance of any such step by any such third party or end-user.” (Def.’s Mot. 17 (citing Compl. ¶ 120) (internal quotations omitted).) However, Intel completely ignores the rest of HDC’s detailed joint infringement allegations. (*See* Compl. ¶¶ 72-73, 120-121, 172-173, 222-223) alleging, *inter alia*, that: (1) Intel “exercises control over the methods performed” by the accused

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<sup>3</sup> Intel incorrectly cited *Lyda* as a 2017 case, but it is in fact a 2016 case. While likely a typo on Intel’s part, it is important to note because the theory of joint infringement has undergone, and is still undergoing, an evolution in thought and application with *Lyda* as a new foundation.

products and receives multiple benefits from others’ use of the accused products; (2) end-users and third parties also receive multiple benefits; (3) Intel “establishes the manner and timing of that performance by the third-party or end-user”; (4) “[a]ll third-party and end-user involvement, if any, is incidental, ancillary, or contractual”; and (5) Intel built and designed the accused products, dictates directions and instructions for use of the accused products, can terminate others’ access to and use of the accused products, and updates and provides ongoing support and maintenance for the accused products. This is sufficient at the pleadings stage.<sup>4</sup>

Intel wrongly asserts that “HDC is silent as to how the accused products allegedly satisfy any dependent claim.” (Def.’s Mot. 17.) This is simply not true, as HDC’s Complaint explicitly alleges that Intel’s accused products infringe each and every claim of the asserted patents, including the dependent claims. (*See e.g.*, Compl. ¶¶ 69, 117, 169, 219 (alleging that “Defendant Intel’s accused products and software embody each limitation of the dependent claims” of each patent)). In making such a blatantly wrong assertion, Intel misrepresents non-precedential cases that are not applicable. (Def.’s Mot. 17.) For instance, in *Oil-Dri Corp. of Am. v. Nestle Purina Petcare Co.*, the plaintiff offered a threadbare, six-page complaint that failed to allege certain claim limitations, a fact that plaintiff did not dispute. No. 15-CV-1067, 2017 WL 1197096, at \*5 (N.D. Ill. Mar. 31, 2017) (complaint attached as **Exhibit 1**). HDC’s Complaint plainly alleges that Intel’s accused products infringe each claim of the asserted patents, including the dependent claims.<sup>5</sup>

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<sup>4</sup> Intel wrongly asserts, without support, that “concrete acts of direction and control” need to be alleged and “actual third parties or end-users” need to be identified. (Def.’s Mot. 16). Regardless, HDC’s Complaint both provided examples of Intel’s direction and control and identified exemplary third parties and end-users. (*See e.g.*, Compl. ¶¶ 72-73 (providing examples of Intel’s direction and control), ¶¶ 10-12 (identifying exemplary third parties and end-users).)

<sup>5</sup> *See Align Tech., Inc. v. 3Shape A/S*, 339 F. Supp. 3d 435, 444 (D. Del. 2018) (holding that one representative claim was sufficient to provide notice at the pleadings stage).

Intel wrongly asserts that “the Complaint does not provide any factual allegations as to how Intel’s FPGAs and SoCs allegedly satisfy any asserted claims.” (Def.’s Mot. 18). As with Intel’s other arguments, this is wrong. HDC expressly provides representative Intel branded FPGAs and SoCs (Compl. ¶ 53 (*e.g.*, Intel’s Stratix, Agilex, and Arria products), and makes clear allegations that these products infringe the asserted patents (*see id.* ¶¶ 55-73, 101-122, 150-176, 202-226). Intel again relies on an old, non-precedential case that is distinguishable from the current action. (*See* Def.’s Mot. 18 (citing *Lantiq N.A. v. Ralink Tech. Corp.*, No. CV 11-00234 EJD 2011 WL 26000747, \*6-8 (N.D. Cal. June 30, 2011) (plaintiff simply asserted that “one or more claims” were being infringed by broad categories of products).) For these reasons, Intel’s Motion should be denied.

### **III. HDC Has Properly Stated Claims for Indirect Infringement, both Induced and Contributory.**

The case law is replete with examples where advertising materials, instructions, or user manuals of the defendant are sufficient evidence of active intent to induce infringement. *See, e.g., Canon, Inc. v. TCL Electronics Holdings Ltd.*, No. 2:18-CV-00546-JRG, 2020 WL 1478356, \*5-6 (E.D. Tex. Mar. 25, 2020) (promotional and marketing materials, supporting materials, instructions, product manuals, and/or technical information); *Motiva Patents, LLC v. Sony Corp.*, 408 F. Supp. 3d 819, 830-34 (E.D. Tex. 2019) (promotional materials and instruction materials).

HDC’s Complaint explains in great detail how Intel encourages and directs the infringing activities of third parties and end-users. (*See e.g.*, Compl. ¶¶ 74, 123, 177, 227 (asserting induced infringement for each asserted claim), ¶¶ 76, 125, 179, 229 (alleging active encouragement of infringement through at least “promotional and instructional materials, as well as technical specification and requirements, and continuing technical assistance.”), ¶¶ 4-5, 30-38 (demonstrating Intel’s actual knowledge).) HDC’s Complaint more than meets these requirements.



The case law demonstrates that to succeed on a claim of contributory infringement, a “plaintiff must show that defendant knew that the combination for which its components were especially made was both patented and infringing and that defendants’ components have no substantial non-infringing uses.” *Cross Med. Prod., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1312 (Fed. Cir. 2005); *see also* 35 U.S.C. § 271(c). As with induced infringement, HDC’s Complaint more than meets the requirements to plead contributory infringement. (*See, e.g.*, Compl. ¶¶ 35, 78, 79, 80, 81 (alleging Intel’s knowledge, Intel’s supplying of infringing components, Intel’s optimization of accused products through SVM-RFE processes, and the non-staple nature of SVM-RFE without a substantial non-infringing use).)

Taken as true, HDC more than sufficiently states claims for induced and contributory infringement, and Intel’s Motion should be denied.

## **CONCLUSION**

For the foregoing reasons, HDC respectfully requests that the Court deny Intel’s motion to dismiss in its entirety. While HDC does not believe there are any deficiencies in its Complaint, should the Court find otherwise, HDC respectfully requests leave to amend, which shall be “freely give[n] ... when justice so requires.” Fed. R. Civ. P. 15(a). In either event, as it did in its Complaint, HDC respectfully requests early limited discovery.<sup>6</sup> (Compl. at 143.)

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<sup>6</sup> Discovery will show that, as it is a matter of public record, Intel, itself, argued and overcame a Section 101 rejection during the prosecution of its own patent, that was later copied by HDC to provoke the Interference.

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Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that on November 23, 2020, the foregoing was filed electronically in compliance with Local Rule CV-5(b)(1) and served via the Court's electronic filing system on all counsel who have consented to electronic service.

/s/ Erick Robinson

Erick Robinson